Crop Production News

VOLUME 35 NO. 7

OCTOBER 11, 2013

AGRICULTURE

CROPS

EDITOR'S COMMENTS

by Sean Miller, PAg.
Provincial Specialist, Plant Disease

As the 2013 growing season draws to a close, we would like to extend our appreciation to our CPN authors and readers. Approximately 700 people subscribed to CPN this season. Seven issues of CPN were made possible by several different Ministry specialists who contributed over the season. Thank you all.

I would very much appreciate it if you could let us know how we did in 2013, and what topics you would like to see included in the 2014 CPN. Please send us your feedback. Is the CPN meeting your information needs for crop pest and production issues? Please fill out the short questionnaire on the back page and e-mailing a copy to cpn@gov.sk.ca.

Thank you for your feedback and your participation in the 2013 Crop Production News!

Saskatchewan Agriculture's *Crop Report* provides details about harvest progress across the province. Visit the website at www.agriculture.gov.sk.ca/Crop-Report

Crop Production News is a bi-weekly publication prepared primarily by provincial specialists with the Crops and Irrigation and Regional Services branches of the Saskatchewan Ministry of Agriculture. It is a compilation of articles related to entomology, plant pathology, weed science, soils and agronomy issues.

Please do not use any of these articles for any other purpose without first asking the author's permission.

If you wish to be added to or removed from our mailing list, forward your request by email to:
cpn@gov.sk.ca

IN THIS ISSUE

Gluten strength in Canada Western Red Spring Wheat	2
New weeds in Saskatchewan	3
2013 Dutch Elm Disease survey	4
Post-harvest tips	5
Summary of insect issues in 2013	5
Update of fruit crop pest and disease observations for 2013	7
Crop Protection Lab news	9
Crop questions to the AKC	9

Government of Saskatchewan
Ministry of Agriculture

GLUTEN STRENGTH IN CANADA WESTERN RED SPRING WHEAT

by Mitchel Japp, PAg.
Provincial Specialist, Cereal Crops

Canada has a brand image of producing the best quality wheat in the world. That brand image is accurate, but recently there have been complaints about the gluten strength of Canadian wheat. The Canadian Grain Commission (CGC) fields complaints from customers about grain shipments that do not meet specifications. The Canadian International Grain Institute (CIGI) works with customers to show them how to best use wheat once purchased (not considered a formal complaint).

Domestically, millers will use a high proportion of Canadian Western Red Spring (CWRS) wheat. The high quality of this class continues to perform well domestically. However, importers usually blend CWRS with other lower quality, cheaper wheat. Importers need good gluten strength to maintain consistent products using familiar blends. Smaller bakeries may have a wide range of operations, requiring tolerance (gluten strength) to successfully manage those properties. Larger bakeries require a narrow variation in the wheat imported, to be able to manage large batches efficiently.

What is gluten?

Gluten is a protein composite that gives elasticity to dough, helping the dough to keep its shape. Gluten also affects the texture of the finished product. Gluten is made of gliadins and glutenins, which are types of proteins found in wheat.

Producers have typically been rewarded financially for producing high protein wheat. The prairie climate gives western Canadian farmers an advantage for producing high protein wheat, which can then be blended with wheat from other parts of the world where the climate makes high protein wheat impractical or impossible to grow. It is challenging for breeders to increase both yield and protein, because the two properties are inversely correlated.

Flour with a minimum of 11 per cent protein is required for good quality yeast-leavened bread. Because of losses during flour milling, the wheat should have 12 per cent or greater protein.

Wheat varieties that have the same protein content can produce flour that behaves differently, so protein quality is also looked at during the registration trials for western wheat to ensure the overall quality of Canadian wheat classes are maintained. Variations in gluten quality are largely due to varietal differences, but weather can have an impact as well.

One of the tests used to measure gluten quality is the extensograph, often used with a farinograph. The farinograph measures the mixing properties of the dough, while the extensograph measures the extensibility and elasticity of the dough. Extensibility is the dough's ability to stretch without breaking and elasticity is the dough's ability to return to its original shape. These two properties must be balanced. In recent years, some problems with elasticity have appeared.

Causes of current situation

The causes of reduced strength in CWRS are varied and not yet fully understood. CIGI is currently evaluating the effects of crop production management practices (fungicide application), variety, environment and location on the quality traits in CWRS wheat. CIGI is moving as quickly as possible to understand this situation, including conducting field trials at locations across the Prairie Provinces.

What should farmers do?

Currently, not enough is known about the effects of various management strategies, or the interaction of varieties and environment on gluten quality, to make a definite recommendation. Additionally, producers select varieties based on agronomic characteristics suited to them. There are no market-based incentives for gluten strength to lead producers to change their varietal selections, or to make any changes to their operations. Over time, market-based incentives may emerge that reward producers for producing grain with higher gluten strength.

NEW WEEDS IN SASKATCHEWAN

by Clark Brenzil, PAg.
Provincial Specialist, Weed Control

Early detection and rapid response (EDRR) is the current thinking on how best to deal with new weed species. The implementation of EDRR is hoped to intercept new species before they become well established and keep them from spreading further than their initial introduction. Several weed species have appeared in Saskatchewan or nearby that are relatively new to the province and are good candidates for EDRR. These plants are all designated as prohibited weeds under *The Weed Control Act*, which affords municipalities the opportunity to react quickly to to implement EDRR upon their discovery.

Field scabious (*Knautia avrensis*) [right] is a tap rooted perennial that reproduces only by seed. It is a member of the teasel family that is a close relative of the ornamental flower pincushions (*Scabiosa sp.*). Field scabious is a coarse plant with stiff hairs over all green surfaces. Leaves are deeply divided into paired, often pointed, lobes, arranged in the basal rosette or opposite on the stem and can get as long as 25 cm (10 inches). As with many plants, leaves become reduced near the top of the plant.

Field scabious grows initially as a rosette with a stout taproot, then the plant sends up one or more erect stems that remain largely un-branched until flowering begins in late June or early July. The distance between nodes (leaf and branch attachment points) is large, nearly 30 cm (12 inches). The upper portion of the root has many large claw-like buds that produce new shoots.

Field scabious.
Source: Saskatchewan Agriculture.

Flowers form at the end of the main stem. Once the flower is established, paired branches erupt from the node below the flower to support additional flowers. This branch-multiplication continues as long as the growing season permits. The flower has a similar structure to sunflowers, producing many seeds attached to a common rounded base. Flower petals are purple-pink when they first emerge and shift to a pale blue or lilac colour when open. Seeds are blockish and hairy and fall easily from the plant while still green.

Field scabious has been reported in Saskatchewan in Birch Hills, Whitebeech and just south of Yorkton. Registered herbicides are available for control.

Red Bartsia (*Odontites vernus* subsp. *seritonus*) [next page] is a hemi-parasitic annual weed that reproduces only by seed. It is a member of the figwort family that also includes toadflax, snapdragon and mullein. Red bartsia is considered hemi-parasitic because it germinates and grows independently of its grass host for the early part of its life-cycle and then, often coinciding with the first hay cut, it attaches to the roots of perennial grasses and uses them as a platform to support a rapid reproductive burst of growth. Initial seedlings are very inconspicuous beneath the forage canopy. At maturity, red bartsia stands between 10 to 40 cm (five to 16 inches) tall. The stem and foliage of the plant take on a deep red or purple colour and are covered in dense hair. The narrow leaves are approximately three cm (1.35 inches) long and clasp the stem opposite them. The flowers, which resemble snapdragons, are solitary, and emerge from the crotches of upper leaves. Infested hayfields take on a purple hue once the hay has been removed.

Red bartsia is not yet reported in Saskatchewan, but is spreading quickly out of the Manitoba Interlake region, where it was first introduced, and is now reported near the Saskatchewan-Manitoba border.

Red bartsia.
Source: Saskatchewan Agriculture

Jointed goatgrass (*Aegilops cylindrica*) is a winter-annual grass weed that infests winter wheat fields in the Great Plains states of the U.S.A. It is a close relative of wheat, and bread wheat shares a portion of its genetics, allowing hybrids of wheat and jointed goatgrass to occur. In the vegetative stages, jointed goatgrass is nearly indistinguishable from wheat except for the evenly spaced hairs along the margins of base of the leaf that are not found on wheat. The seed heads are cylindrical spikes with seeds appearing to be stacked end-to-end along its length. Photos of jointed goatgrass can be found on the Government of Canada website here.

Because of its close relationship to wheat, there are few options for controlling it in cereal grains with herbicides registered for use in wheat. The exceptions are Clearfield wheat varieties bred to be tolerant to the imidazolinone class of Group 2 herbicides. Unfortunately, Group 2 resistance in jointed goatgrass is now commonplace in the Great Plains states, presenting challenges for this option as well.

Jointed goatgrass is reported in both Montana and North Dakota, but has yet to be documented in Saskatchewan. As a winter annual grass, agronomic practices relying heavily on non-selective spring weed control measures such as herbicide burn-off and occasionally tillage, should help to prevent establishment of this weed in Saskatchewan.

Early detection of these weeds and quick action to control them before they spread are the most effective and efficient ways to address them. If any of these weeds are located in Saskatchewan, please notify the local rural municipality or Saskatchewan Agrciulture Regional Office.

2013 DUTCH ELM DISEASE SUMMARY

by Cecilia Peluola, PAg.
Supervisor, Crop Protection Laboratory

The first submission of Dutch elm disease (DED) caused by *Ophiostoma ulmi* arrived at the Crop Protection Laboratory on June 19. In contrast, the earliest sample last year arrived in April. Despite the late start, DED sample submissions were received on a regular basis and the year saw a significantly higher number of samples compared to 2012. As of September 19, 337 samples had been submitted for DED diagnosis, of which 139 samples were confirmed positive for DED and another 16 samples for Dothierella wilt.

More trees were lost to DED this year than in 2012. The City of Regina and surrounding area lost 22 trees altogether, compared to 13 last year. Twenty-two trees were lost in the City of Moose Jaw, compared to seven in the previous year. Indian Head lost 13 trees and 19 trees were lost from Kanata Valley (Silton and Cupar). Approximate numbers of trees lost in other major cities and towns across Saskatchewan are:

Estevan	5	Prince Albert	10
Fort Qu'Appelle	1	Tisdale	3
Rocanville	5	Grenfell	5
Langenburg	1	Preeceville	1

DED samples were not submitted from the resort village of B-Say-Tah this year.

Elm trees showing symptoms of DED should have samples submitted to the Crop Protection Laboratory for confirmation. Symptoms can include: wilting, yellowing leaves in the summer and curling, brown leaves in the fall with brown streaking under the bark. DED-confirmed trees are to be removed

immediately to prevent further infection and spread to healthy trees. The following information is important to prevent spread of DED to healthy trees:

- Obey the pruning ban effective from April 1 to August 31 each year. This is to ensure elm beetles, which are attracted to the scent of freshly cut elm, do not feed on infected elms and carry the fungus to healthy trees.
- Do not transport or store elm wood so as to avoid providing breeding sites for elm bark beetles - *Hylurogopinus rufipes* (Eichh.), a native species, and *Scolytus multistriatus* (Marsh.).
- Hire a professional to prune infected, sick, dead or broken branches.
- Co-operate with tree inspectors and follow their advice on the management of elm.

For further help, refer to the City of Regina's DED program website.

POST-HARVEST TIPS

by Ken Panchuk, PAg.
Provincial Specialist, Soils

Fall soil testing is underway. Saskatchewan's soil testing labs have geared up for a high volume of samples after this bountiful harvest. High yields mean higher levels of soil nutrients exported in the grain that will need to be replaced.

Fertilizer prices are nearing seasonal lows, allowing producers to get more fall-banding done once the soil temperature cools below 10 C – usually by the start of the second week of October. At this time of the year, the nights are long and cool so you do not have to stop banding because of a few warm days in October. Fall-banding anhydrous ammonia and urea is a beneficial management practice (BMP) under Saskatchewan conditions.

Near freeze-up, probe to determine subsoil moisture levels so that you have some information on moisture reserve levels for planning next season's crop. Check again after the snow melts to make the final adjustments to your target yields and adjust the nutrient inputs accordingly.

If you need accurate precipitation data to explain those low- and high-yielding fields or for crop planning, consider joining the Saskatchewan network of CocoRaHS volunteers at http://www.cocorahs.org/Canada.aspx.

Don't burn unless it is absolutely necessary!

If you must burn, follow the guidelines for safe burning:

- The fire must be out before nightfall.
- Consider wind direction so the smoke blows away from any built-up areas.
- Let the RM and/or local fire department know of your planned activity, just in case.

SUMMARY OF INSECT ISSUES IN 2013

by Scott Hartley, PAg.
Provincial Specialist, Insect/Vertebrate Pest Management

Insect pressure was low in many areas and for most crops in the spring, due to the extended winter and cool, wet conditions in most of Saskatchewan. Generally, it was over-wintering adult species, such as alfalfa weevils and flea beetles, that were first reported as significant pests in some areas. Bertha armyworm was an economic pest in canola but also other crops. Swede midge infestations affected canola crops in the northeast, and late-season infestations of grasshoppers were noted in several area.

Alfalfa weevils have been on the increase for the last few years and were found actively feeding in late May in south-central Saskatchewan. There was no formal survey of insects in forages in 2013; however, as part of a Pest Management Centre-funded project coordinated by Agriculture and Agri-Food Canada, Regional Forage Specialists collected alfalfa weevils from May to July in several districts. The project is intended to develop a degree day bioclimatic model for the alfalfa weevil.

A **pea leaf weevil** survey was conducted from late May to mid-June. Feeding damage is used as an

indicator of the weevils' presence in an area. The range of this insect continues to move eastward in southern regions. The most intensive feeding is in the southwest, but, in 2012, feeding notches on pea leaves were noted just north of the South Saskatchewan River. In 2013, evidence of weevil feeding was noted in rural municipalities numbers 228 and 259 (west-central region). The eastern edge of the pea leaf weevil range appears to be about midway between Swift Current and Moose Jaw and the southern edge extends to near the U.S. border. Aside from infestation levels, actual yield loss from weevil feeding can be reduced, depending on levels of nitrogen present in the soil.

The **cabbage seedpod weevil** was a major insect pest in canola in 2013. Due to the late seeding and large numbers of weevils, many questions were asked related to timing of chemical application and tank mixing with fungicides for sclerotinia. The most severe infestations were reported in the southwest, as in most years. However, spraying for populations was reported in the south-central region, from northwest of Moose Jaw and south to Assiniboia. Cabbage seedpod weevils were present in fields east of Regina in the 2013 survey (coordinated by AAFC) but not at economic levels.

Flea beetles were a concern early in 2013, particularly with young seedlings and slow growing conditions. Research has shown that seed treatments work best under warm, dry soil conditions. Flea beetles were not a significant pest in most areas in the spring but there have been several reports of large numbers of flea beetles congregating in canola fields this fall. Since these will be the over-wintering generation of beetles that cause damage to seedlings in the spring, it suggests that these insects could be a problem in 2014.

Cutworms were not a serious problem in 2013. After outbreak levels in 2010-11, cutworm populations have been on the decline. As part of a major cutworm research project, the Ministry of Agriculture submitted well over 100 cutworm samples in 2012 and only one in 2013.

The potential risk of **diamondback moths** is monitored through evaluating wind trajectories, pheromone traps and in-field observations. Traps were set up by cooperators in April, but no moths were found until the latter half of May. The trap data correspond with data on wind currents provided by Environment Canada for the Prairie Pest Monitoring Group coordinated by AAFC (Saskatoon). There appeared to be no favourable winds from the southern U.S. and northern Mexico until the last two weeks of May, so diamondback moths were not a major pest in 2013.

Heat accumulation (degree days) was slow and **wheat midge** emergence was delayed. Parts of southern Saskatchewan usually observe the start of midge emergence in the last week of June; however, as of late June this year, no parts of Saskatchewan had achieved sufficient heat units for the start of emergence of the adult midge flies. Excessive moisture in areas resulted in cooling effects and slower degree day development. The susceptibility of the wheat crop did not necessarily coincide with peak midge emergence in many cases. Use of wheat midge-tolerant varieties also reduced the impact of this insect pest.

The **bertha armyworm** moth pheromone trap counts were very low in June but greatly increased the first week in July, peaking before the middle of the month. A map of the accumulated number of male moths from the traps was posted and updated weekly on the Saskatchewan Agriculture website. Some high trap counts did not correspond to field scouting numbers; however, spraying for the bertha armyworm larvae was reported to some degree in most areas where canola was grown. Infestations were also reported from the southwest, where bertha armyworm is an uncommon pest. Bertha armyworm also caused damage in pea and flax crops.

For the second year in a row, significant **swede midge** infestations were reported in canola fields in northeastern Saskatchewan near Nipawin and Carrot River. Typical damage was to canola flowers that were infested with swede midge larvae. There was spraying for this pest in 2013; however, there are no reliable recommendations for timing of control for the swede midge. In Ontario, this insect has been a pest of canola and brassica vegetables for several years. In vegetables, multiple insecticide applications are required. Due to the multiple

generations in a year, the swede midge is difficult to control and multiple applications is not likely a viable economic option in canola. Research is required to determine management options under Prairie conditions.

After a record year in 2012 with aster yellows affecting canola and other crops, the disease was not prevalent in 2013. The disease is vectored by the **aster leafhopper.** As with diamondback moths, favourable winds from the south bringing in the moths and leafhoppers were not observed until the latter half of May. This was over a month later than in 2012 and reduced the number of generations and consequential population increase in 2013.

Higher-than-normal **grasshopper** populations were reported in the northeast in late July near Whitefox and Nipawin. Grasshoppers are usually most problematic in southern, drier regions and large fall populations were noted in other areas as well. The fall grasshopper survey was done when grasshoppers had primarily reached the adult stage and were capable of reproduction. A forecast map based on over 1000 sites observed by Saskatchewan Crop Insurance field personnel will be posted on the Saskatchewan Agriculture website.

UPDATE OF FRUIT CROP PEST AND DISEASE OBSERVATIONS FOR 2013

by Forrest Scharf, PAg.
Provincial Specialist, Fruit Crops

The majority of the commercial orchards in Saskatchewan achieved good yields with better-than-average fruit quality in 2013. Most productivity gains were a result of plant maturation, as well as diligent insect and disease management. In addition, some improved yield was attributable to cool late-spring conditions that pushed blossoming beyond the frost period in most areas. Luckily, the cold spring was followed by a relatively dry, hot summer that provided enough sunshine to allow most fruit to achieve higher Brix levels than in the past three to four years (equivalent to an average two per cent increase in sugar content).

In regard to overwintering damage, given the length and severity of the winter, surprisingly few crops were observed to have suffered. Some **dwarf sour cherries** were top-killed in a few locations in the northeast and near Saskatoon, while partial winter damage (where the rate of vascular flow was reduced causing reduction in the supply of nutrients to leaves) was more geographically extensive but largely limited to plants that were already weak before the onset of winter. The snow cover in most locations was greater than average, which provided insulation to **strawberry** crops and other shorter fruit species like **haskap** and **black currants**, allowing them to overwinter without significant damage. **Saskatoon** orchards suffered deer-foraging losses in various locations, but most significantly northwest of Saskatoon where snow cover made ground foraging difficult and saskatoon bushes a particularly attractive food source. The foraging on saskatoon bushes occurred from roughly three to six feet above ground along the side of orchard rows. The plants physiologically compensate for the forage loss by redirecting energy to new growth points, but fruit production in the foraged area of the plant is significantly reduced because the flower buds were consumed in that region of the plant.

In regard to **strawberry**, the most significant disease issue was Aster yellows in the east-central region of the grain belt. Aster yellows had been identified in the northwest in 2012, but the disease did not appear to spread from infected plants in that area in 2013. It is somewhat unclear whether the disease in the east-central region was brought in with new day-neutral Albion cultivar daughter plants, or whether it was transmitted via leafhoppers that were windblown into the region and already carried the aster yellow phytoplasma (16SrRNA group, subgroup I-K, or III-K). In any event, it was reported that the strawberries appeared to be healthy until the fruit developed and displayed phyllody, a condition in which the achenes (seeds) that are spaced over the fruit surface, "leaf out" making the fruit unmarketable. (see CPN #5 for photos) There are no fungicides that can be applied to treat this condition, so the infected plants should be destroyed. Leafhoppers that spread the disease must also be controlled in order to minimize the potential infection of uninfected plants, and registered insecticides are available in order to help control leafhopper populations.

In regard to **dwarf sour cherry**, an interesting observation was made regarding European pear slug (or sawfly) infestations on some sour cherries east and northeast of Saskatoon. It appears the insects prefer specific cultivars over others. In one location, the pear slugs were causing extensive damage to the leaves of Juliet cultivar sour cherries, but did not feed on cultivars like Carmine Jewel or Romeo. At the same location, many of the Juliet cherries were top-killed (over the winter) while the Carmine Jewel and other cultivars did not suffer anywhere near as much winter damage. If winter damage is causally linked with extensive leaf damage caused by pear slugs foraging on leaves the previous fall, this would overturn the somewhat popular belief that slug foraging is not a threat to plant health. Orchardists sprayed some of the slug-damaged sites with registered insecticides in August, so it will be interesting to see if there is an apparent beneficial effect of slug control on overwintering success in susceptible sour cherry cultivars next spring. In regard to disease, some sour cherries were found to be infected with brown rot (*Monilinia* spp.) at minimally managed sites. In any event, most commercial orchards achieved excellent control of the disease by applying registered fungicides at the appropriate times over the blossom period and before the final ripening in the build up towards the harvest period.

Black knot on chokecherry.
Source: Saskatchewan Agriculture

Saskatoons were subjected to their standard inventory of disease and insect pests. In regard to disease, *Entomosporium* leaf and berry spot continues to be an issue, but growers have developed effective fungicide protocols to manage the disease in commercial orchards. In orchards that already had fire blight in previous years, that disease continued to spread. The orchard owners plan to cut the tops off of the affected saskatoons and then burn the remaining above-ground growth in order to reduce the number of suckers and rid the rows of disease. The plants rejuvenate quickly and in the second year following the burning, the plants typically produce fruit again. There were threats of flooding damage in the Valley Road area southwest of Saskatoon along the river, but area orchards were not reported to have sustained significant losses as the flooding didn't last longer than a week (there was also likely a good level of aeration in the water) so the roots did not appear to suffer any immediate damage.

"Water core" was found in some young **apples**. This condition affects fruit quality and is more prominent in years with cool nights and warm days, and in soils that are low in calcium but high in nitrogen and boron. It can also be induced by excessive thinning, removing blossoms or young developing fruit in order to allow the remaining fruit to achieve a larger size. In one location, excessive thinning may have occurred as a result of cedar waxwings that were seen removing blossoms. In apples affected by water core, intercellular spaces that run through the fruit get filled with sorbitol-rich solutions that are transported into the fruit from the tree too quickly to be incorporated as fructose sugars. The taste and texture makes the fruit unmarketable.

Other diseases of note included spur blight and botrytis in raspberries in the northwest, and powdery mildew in many areas. Black knot (left) continued to plague **chokecherry** and the only control for the spread of this disease is diligent pruning to remove the diseased tissues and then burning the clippings.

Saskatchewan continues to be free of the Spotted Wing Drosophila; however, this pest has been found in strawberries and raspberries in southeastern Manitoba, and in raspberries in the Red Deer region. It is unclear whether this insect is wind-blown into regions or transported with infected fruit. We will continue to learn more about this invasive insect, and maintain our emergency use registrations in case of future outbreaks.

CROP PROTECTION LAB NEWS

by Cecilia Peluola, PAg.
Supervisor, Crop Protection Lab

As expected, completion of harvesting has resulted in a significant reduction in the number of samples submitted to the lab in the last month. Sample submission to the laboratory was significantly higher this year compared to 2012. Submissions in the last month were concerns regarding poor heading in cereals. Disease/disorder symptoms such as: floret abortion, head (white head) kernel and awns discolorations, and leaf and crown rust of cereals were submitted. Diagnoses of these symptoms were Fusarium head blight caused by *Fusarium* spp on the discolored heads. Environmental effects were responsible for blank and aborted florets. Leaf and crown rust were caused by *Puccinia triticina* on wheat and *P. coronata* on oats. Canola diseases were blackleg caused by *Leptosphaeria maculans* and root rot mainly due to *Rhizoctonia solani* and *Fusarium* spp. The causes of poor yields among pulse crops (lentil and pea) were identified as mainly root rots caused by different type of rot pathogens, stemphylium blight on lentil caused by *Stemphylium botryosum*; chemical damage was also diagnosed from peas samples. Forage crops such as alfalfa and red clover were diagnosed with anthracnose, powdery mildew and common leaf spot.

Leaf blight was diagnosed on America elm, and environmental stress on spruce. Anthracnose, canker, nutrient deficiency and Marssonina leaf blight were diagnosed on poplar and some other trees.

Important diseases/disorders:

Fusarium head blight on wheat and barley- *Fusarium* spp

Leaf Rust on wheat – *Puccinia triticina*

Crown Rust on oat – *Puccinia coronata*

Powdery mildew of red clover – *Erysiphe polygoni*

Anthracnose of alfalfa – *Colletotrichum* sp

Aster yellows – wheat, canola and strawberry

Root rots of canola, lentil and pea – *Rhizoctonia solani, Fusarium* spp,

Leaf Blight of lentil – *Stemphylium botryosum*

Dutch elm disease (DED):

DED sample submissions have diminished in the last month. However, there were more samples of DED submitted this year compared to 2012. The percentage of positive samples also increased. Of the 337 submissions, 139 samples tested positive for Dutch elm disease caused by the fungal pathogen *Ophiostoma ulmi*, and a few were positive for Dothiorella wilt. For more information, please see the DED summary in this edition of CPN.

Weed samples identified:

Common Mullein – *Verbascum thapsus*

Wild parsnip- *Pastinaca sativa*

Wild alfalfa- *Psoralea tenuifllora*

Purple loosestrife- *Lythrum salicaria*

Wooly burdock- *Arctium tomentosom*

Pennsylvania or American pellitory- *Parietaria penysylvanica*

Nodding beggarticks- *Bidens cernua*

CROP QUESTIONS TO THE AKC

by Brent Flaten, PAg., CCA
Integrated Pest Management Specialist

The window for post-harvest weed control is closing, so knowing what conditions still allow for good control of weeds is important. Generally, 2,4-D can be used for fall control of broadleaf winter annuals later than glyphosate. Since 2,4-D works as a growth stimulant, weeds that are going dormant can be "kick-started" into growing again, resulting in reasonable control late in the fall. When using 2,4-D in the fall, be aware of spring cropping concerns and restrictions. The severity of potential crop damage is dependent on the type of crop, the length of time during the fall with adequate soil moisture, sufficient soil temperature to allow herbicide breakdown to occur and soil texture (2,4-D is bound more in clay

soils and therefore residues remaining are not as available to be taken up by the roots of sensitive plants).

However, glyphosate is different. Actively growing weeds and sufficient re-growth are critical to successful post-harvest perennial weed control. This is not always possible, so evaluate the conditions carefully. If frost occurs, wait a few days to assess the damage to the weed leaves. If weed leaves are brittle, yellowing or browning off, herbicide control will be decreased. Make sure that crop residues are evenly spread. Also make sure neither crop residue nor dust are not covering target weeds since this may diminish herbicide uptake by the weeds.

Below are some specific recommendations for certain weeds:

Canada thistle

Research has indicated a post-harvest glyphosate application may only provide 65 per cent control of Canada thistle, but the level of control can increase to 82 per cent if more re-growth (i.e. three to four new healthy leaves) is present. For the best results, allow thistles to regrow for four to six weeks and apply a minimum of 1,000 grams active ingredient (gai) per acre. (2.8L/acre of 360g/L formulation)

Dandelion

Generally post-harvest application of glyphosate gives better and longer lasting control of dandelions than pre-seed applications. Research at the University of Saskatchewan found that September applications sometimes gave better control than October applications. This is thought to be due to the quality of the leaf tissue remaining on the plant after several frosts.

Foxtail barley

Post-harvest glyphosate applications on foxtail barley usually provide better control than pre-harvest or pre-seeding applications. Again, the foxtail barley has to show re-growth and be actively growing for best results. Headed-out foxtail barley is not actively growing. Bigger clumps of foxtail barley are harder to control and require higher rates of glyphosate.

Terminating forage stands

Alfalfa is hard to control in a single operation. A fall application after harvest gives the producer to give the plant a one-two punch with a follow-up application the next season to deal with any survivors. However, remember that the alfalfa has to be actively growing, so it is important to ensure applications are made before the alfalfa goes dormant. Any spots in the field where alfalfa hasn't regrown due to dry soil or frost may not be controlled satisfactorily. Use 540 to 720 gai per acre of glyphosate (1.5 to 2 litres per acre if using 360 g/L concentration). If seeding to wheat or barley the following spring, add at least one half litre per acre of 2,4-D to the glyphosate to boost control. Amine formulations of 2,4-D are slower-acting, allowing time for the glyphosate to move within the plant. Make sure to rinse chem-handlers with water between pouring in the 2,4-D amine and adding glyphosate if it is the 540 gm/litre formulation to avoid physical incompatibility issues.

Readers' Survey

What article topics were most beneficial in the 2013 Crop Production News?

- ☐ Provincial Crop Protection Lab updates
- ☐ Agriculture Knowledge Centre updates
- ☐ Insect updates, surveys and forecasts
- ☐ Plant disease updates
- ☐ Vertebrate pest control and cautions
- ☐ Pesticide updates
- ☐ Other: _____
- ☐ Soil/fertility issues
- ☐ Organic crop updates
- ☐ Forage production
- ☐ Pulse/cereal/oilseed production
- ☐ New crops/horticultural crops
- ☐ Field days/events

What crop production/pest issue information should we provide next year?

Please complete this survey, copy it to an email and send it to cpn@gov.sk.ca.

Thank you for your feedback and your participation in the 2013 Crop Production News!

The Crop Production News is a publication of
the Crops and Irrigation Branch,
Saskatchewan Ministry of Agriculture
Telephone: 306-787-4670
Email: CPN@gov.sk.ca